

REMARKS

Claims 68-93 are pending in this application. Reconsideration and withdrawal of the rejections set forth in the Official Action are respectfully requested in view of this amendment and the following reasons. Claims 68, 69, 71, 74, 77, 79, 82, 84, 87-89, and 92 have been amended to correct informalities.

It is respectfully submitted that the above amendments introduce no new matter within the meaning of 35 U.S.C. §132. Accordingly, Applicant requests reconsideration and timely withdrawal of the pending rejections for the reasons discussed below.

Claim Objection

Claims 82-87 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 82-87 have not been amended in independent form because Applicant respectfully submits that claims 82-87 depend from an allowable base claim and are allowable for at least this reason. Accordingly, Applicant respectfully requests withdrawal of the objection to claims 82-87.

Rejections under 35 U.S.C. §112

Claims 68-93 stand rejected under 35 U.S.C. §112, second paragraph, as being allegedly indefinite for failing to particularly point out and distinctly claim the subject matter

which applicant regards as the invention. Particularly, it is asserted that the phrases "adapted to" and "or the like" are unclear, which render the claims indefinite.

In claims 68, 69, 71, 74, 77, 79, 82, 84, 88, 89, and 92, the phrase "adapted to" has been replaced with -- configured to --; and in claims 68, 87, 88, and 92, the phrases "or the like" and "adapted to" have been removed from the claims. Accordingly, it is submitted that claims 68-93 are clear and definite within the meaning of 35 U.S.C. §112, second paragraph. Thus, Applicant respectfully requests withdrawal of the 35 U.S.C. §112, second paragraph, rejection of claims 68-93.

Rejections under 35 U.S.C. §102

Claims 68-70, 72-81, and 92 stand rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 7,089,876 to Porat ("Porat").

"Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration." *W.L. Gore & Assocs. V. Garlock*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984).

Claim 68, as amended, recites:

A cleaning robot configured to move in a swimming pool in accordance with commands from a main controller therein, the robot when in use being free of any cables connected to an external power supply, and including:

a body unit with a battery power pack, configured to move along the floor and/or walls of the pool;

a tail unit comprising a head portion configured to float on the surface of the pool while the body unit is on the floor of the pool, the head portion

comprising a connector designed for facilitating charging batteries or battery in the battery power pack by an external charger; and

a tethering cable attached at least in use, to the body unit, the tethering cable being of sufficient length to allow the head portion to float on the surface of the pool while the body unit is on the floor of the pool.

Applicant submits that the terms "external power supply" and "external charger" recited above are reasonably understood as elements that are not part of, and located apart from, the cleaning robot. This is interpretation of the claim terms proper in view of the specification. For example, the present application describes that "the [external battery] charger 44 comprises an external cable 46 adapted for connecting an external power source, and a charging cable 48 adapted for connecting to the socket(s) 40 of the head portion 24 for charging the robot 1" (page 8, lines 17-19).

Thus, the presently claimed subject matter is directed to a pool cleaning robot having a floating tail unit and a body unit with a battery power pack, wherein the tail unit comprises "a connector designed for facilitating charging batteries or battery in the battery power pack by an external charger," as recited in claim 68. Hence, it is clear that the external charger may be connected to the connector *for charging the battery power pack via the tail unit*.

The Official Action concludes that Porat anticipates the claim feature of "a tail unit comprising a head portion configured to float on the surface of the pool while the body unit is on the floor of the pool, the head portion comprising a connector designed for facilitating charging batteries or battery in the battery power pack by an external charger," solely

relying on Fig. 1, but without providing any further explanation (Official Action, page 3, section 8, 4th para.). Specifically, the Examiner indicates that the electronic platform 10 of Porat anticipates the tail unit of claim 68. However, neither an *external* charging unit nor connections to such a unit is found in Fig. 1. It is not clear which part of Porat anticipates the feature of "a connector designed for facilitating charging batteries or battery in the battery power pack by an external charger," recited in claim 68. In this regard, Applicant respectfully notes that the Examiner even fails to establish a *prima facie* case of anticipation.

Furthermore, Applicant respectfully draws the Examiner's attention to Porat's following description (col. 3, lines 46-53):

As will be described in more detail below, the electric power for platform 10 is supplied through a connecting power cable 90 that is attached to a robotic pool cleaner 100 that is positioned at the bottom surface 3 of the pool. The robotic cleaner 100 is *powered by a rechargeable battery 102* that has a power input/output connector 103 on its exterior surface that is adapted to receive a mating connector on the end of cable 90. (emphasis added)

As shown in Fig. 1 of Porat, the rechargeable battery 102 is in the robotic pool cleaner 100 (allegedly, the "body unit") and provides power to the platform 10 (allegedly, the "head portion" and/or "tail unit"). By contrast, the subject matter of claim 68 is directed to charging of the robot's battery/batteries is accomplished by an *external* charger via a *connector in the tail unit*. Thus, it is clear that Porat fails to teach or suggest at least the feature, "a tail unit comprising a head portion configured to float on the surface of the pool while the body unit is on the floor of the pool, the head portion comprising a connector

designed for facilitating charging batteries or battery in the battery power pack by an external charger," as recited in claim 68. Since Porat fails to disclose each and every feature recited in claim 68, the reference does not anticipate the claim. Accordingly, Applicant respectfully submits that claim 68 is allowable over Porat.

Claims 69-70 and 72-81 depend from claim 68, and thus are allowable for at least this reason. However, at least some of these dependent claims are allowable even in view of their additional features, for example:

As per claim 76, the Examiner asserts that Porat discloses "an external battery charger, which is connectable to the tail unit for charging at least one battery ..." (Official Action, page 5, 2nd para.). However, Fig. 1 of Porat, which the Examiner relies upon, does not disclose an external charger. Thus, Applicant respectfully submits that claim 76 is allowable over Porat even in view of its additional features.

As per claims 79 and 80, the Examiner asserts that Porat discloses, in col. 4, lines 1-19, that a robot controller is adapted to store a certain orientation of the robot in relation to a fixed direction, said controller being adapted to provide the robot with a command to align its orientation in accordance with the stored orientation, which is defined by the robot's initial orientation. However, the cited portion of Porat merely discusses the geometry and generally construction of the floating platform. Any relevance to a controller for storing the robot's orientation cannot be reasonably understood or inferred from the descriptions. Moreover, such a feature is not disclosed in Porat. Thus, Applicant respectfully submits that claims 79 and 80 are allowable over Porat even in view of their

additional features.

Furthermore, Claim 92, as amended, recites:

A cleaning configured to move in a swimming pool in accordance with commands from a main controller therein, the robot when in use being free of any cables connected to an external power supply, and including a body unit with a battery power pack, configured to move along the floor and/or walls of the pool, and a tail unit comprising a head portion configured to float on the surface of a pool, and a tethering cable attached, at least in use, to the body unit; the robot comprising a means for detecting its orientation in relation to a fixed direction.

As per claim 92, the Examiner asserts that the feature, "the robot comprising a means for detecting its orientation in relation to a fixed direction," is anticipated by col. 4, lines 30-34 of Porat. However, this portion of Porat merely discloses a lanyard that may be used to retrieve the robot from the pool. Any relevance to means for detecting the robot's orientation cannot be reasonably understood or inferred from the descriptions. Moreover, such feature is not disclosed in Porat. Thus, Applicant respectfully submits that claim 92 is allowable over Porat.

Accordingly, Applicant respectfully requests withdrawal of the 35 U.S.C. §102(e) rejection of claims 68-70, 72-81, and 92 because Porat does not teach each and every feature recited in these claims, as required for anticipation under 35 U.S.C. §102. Thus, Applicant respectfully requests withdrawal of the 35 U.S.C. §102(e) rejection of claims 68-70, 72-81, and 92.

Rejections under 35 U.S.C. §103

1. Claims 88-91 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Porat in view of U.S. Patent Application Publication No. 2008/0281481 applied for by Abramson, *et al.* ("Abramson").

To establish an obviousness rejection under 35 U.S.C. § 103(a), four factual inquiries must be examined. The four factual inquiries include (a) determining the scope and contents of the prior art; (b) ascertaining the differences between the prior art and the claims in issue; (c) resolving the level of ordinary skill in the pertinent art; and (d) evaluating evidence of secondary consideration. *Graham v. John Deere*, 383 U.S. 1, 17-18 (1966). In view of these four factors, the analysis supporting a rejection under 35 U.S.C. 103(a) should be made explicit, and should "identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the [prior art] elements" in the manner claimed. *KSR Int'l. Co. v. Teleflex, Inc.*, 550 U.S. 398 (2007). Furthermore, even if the prior art may be combined, there must be a reasonable expectation of success, and the reference or references, when combined, must disclose or suggest all of the claim limitations. See *in re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Claim 88, as amended, recites:

A cleaning robot configured to move in a swimming pool along two scanning directions obtained by adjusting the orientation of the robot in a predetermined way relative to a reference orientation in relation to a fixed direction, the scanning directions having a predetermined angle therebetween, independently of the swimming pool's shape.

In Applicant's previous response of June 18, 2009, claim 88 was amended to clarify

that the term "orientation" related to orienting the robot "in relation to a fixed direction." Applicant submits that meaning of the feature "adjusting the orientation of the robot in a predetermined way relative to a reference orientation in relation to a fixed direction" is clear *per se*. However, it may be elucidated by reference to the passage in the specification which describes an embodiment of the presently claimed subject matter. For example, page 11, lines 3-13 of the present application describes, by example, that the reference orientation is the absolute orientation of the robot at a certain point in scanning (generally at the beginning). As illustrated in and described with reference to Fig. 5A, the robot continually adjusts its orientation in a predetermined way relative to the reference orientation; in the example provided in the above-mentioned passage, the orientation of the robot is adjusted alternately between aligning itself such that its orientation is parallel to the reference orientation (indicated by vertical lines in Fig. 5A) and such that its orientation is perpendicular to the reference orientation (indicated by horizontal lines in Fig. 5A). Thus, according to the presently claimed subject matter, a robot restricts its movement to two absolute, i.e., not connected to the shape of the pool, scanning directions.

The Examiner alleges that claim 88 is unpatentable over Porat in view of Abramson. Particularly, the Examiner admits that the claim feature, "adjusting the orientation of the robot in a predetermined way relative to a reference orientation," is not disclosed in Porat, but asserts that it is taught by paragraphs [0053], [0140], and [0142] of Abramson (Official Action, page 6, last line – page 7, line 9).

Paragraph [0140] of Abramson describes that, at a particular point in the scanning, if

a predetermined condition is not met, the robot changes its direction (see block "1222" in the flowchart of Fig. 24A). Paragraph [0140] also describes that the turn angle may be any turn angle. However, it is clear from this paragraph that the angle is preprogrammed (e.g., 45°) or may be input by a user:

Changing of the scanning direction ... can involve a turning movement of approximately 45 degrees by the apparatus 20 ... Other turning angles are also permissible, and can be programmed or entered into the control system 1000, for example, through the remote controller 46.

However, the turning angle disclosed by Abramson is relative to the robot's orientation before it rotates, and not to an *absolute* direction. Thus, Applicant respectfully submits that neither paragraphs [0053], [0140] and [0142] of Abramson, upon which the Examiner relies, nor any other part of the disclosure discloses at least the feature, "adjusting the orientation of the robot ... in relation to a fixed direction," as recited in claim 88.

Claims 89-91 depend from claim 88, and thus are allowable for at least this reason. However, at least some of these dependent claims are allowable even in view of their additional features, for example:

As per claim 90, Examiner asserts that paragraph [0099] of Abramson teaches that the reference orientation is defined by the robot's initial orientation. However, the cited portion of Abramson merely refers to various constructional features of the robot. The only feature concerned with orientation is the support wheel 74, which is disclosed as tracking "odometry and angles of travel, to signal the control system 1000 for determining direction

and orientation of the apparatus 20.” There is no indication that the orientation of the robot is based on its initial orientation. Furthermore, Abramson clearly describes that the controller 1000 tracks total distance traveled by the robot (paragraph [0101]). However, it should be appreciated that only the instantaneous angle of the support wheel is determined by the controller. Thus, Applicant respectfully submits that claim 90 is allowable over Porat and Abramson even in view of its additional features.

2. Claim 71 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Porat in view of Thrun, *et al.*, “Probabilistic Algorithms and the Interactive Museum Tour-Guide Robot Minerva” (“Thrun”).

Claim 71 depends from claim 68. Thrun was cited by the Examiner to teach the additional features of the dependent claim, but fails to cure the deficiencies of Porat noted above with regard to claim 68. Thus, even if one of ordinary skill in the art happens to combine the teachings of Porat and Thrun, this combination still does not teach at least “a tail unit comprising a head portion configured to float on the surface of the pool while the body unit is on the floor of the pool, the head portion comprising a connector designed for facilitating charging batteries or battery in the battery power pack by an external charger,” as recited in claim 68. Accordingly, claim 71 is allowable over the references because it depends from allowable claim 68.

3. Claim 93 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Porat

in view of U.S. Patent No. 7,144,057 to Young, *et al.* ("Young").

Claim 93 depends from claim 92. Young was cited by the Examiner to teach the additional features of the dependent claim, but fails to cure the deficiencies of Porat noted above with regard to claim 92. Thus, even if one of ordinary skill in the art happens to combine the teachings of Porat and Young, this combination still does not teach at least "the robot comprising a means for detecting its orientation in relation to a fixed direction," as recited in claim 92. Accordingly, claim 93 is allowable over the references because it depends from allowable claim 92.

Accordingly, Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claims 71, 88-91, and 93. Since none of the other prior art of record, whether taken alone or in any combination, discloses or suggests all the features of the claimed subject matter, Applicant respectfully submits that claims 71, 88-91, and 93 are allowable.

Allowable Subject Matter

Applicant appreciates the indication that claims 82-87 contain allowable subject matter. Claims 82-87 have not been amended in independent form because Applicant respectfully submits that claims 82-87 depend from allowable claim 68 and are allowable for at least this reason. Accordingly, Applicant submits that claims 82-87 are in condition for allowance.

CONCLUSION

Applicant believes that a full and complete response has been made to the pending Official Action and respectfully submits that all of the stated objections and grounds for rejection have been overcome or rendered moot. Should the Examiner feel that there are any issues outstanding after consideration of this response, the Examiner is invited to contact Applicant's undersigned representative at the number below to expedite prosecution.

If an extension of time is necessary to prevent abandonment of this application and is not filed herewith, then such extension of time is hereby petitioned for under 37 C.F.R. §1.136(a). Any fees required for further extensions of time and any fees for the net addition of claims are hereby authorized to be charged to our Deposit Account No. 14-0112. Prompt and favorable consideration of this Reply is respectfully requested.

Respectfully submitted,
THE NATH LAW GROUP

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THE NATH LAW GROUP
112 South West Street
Alexandria, VA 22314
(703)548-6284



Susanne Hopkins
Registration No. 33,247
Derek Richmond
Registration No. 45,771
Sung-Yeop Chung
Registration No. 64,130
Customer No. 20529